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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,914	05/04/2001	William B. Chapman	NUFO-028	7122

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EXAMINER

RODRIGUEZ, ARMANDO

ART UNIT PAPER NUMBER

2828

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/848,914

Applicant(s)

CHAPMAN ET AL.

Examiner

ARMANDO RODRIGUEZ

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,16,20-22,26 and 27 is/are rejected.
- 7) ☒ Claim(s) 3,4,8-15,17-19 and 23-25 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9-14-2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: no structural relationship has been recited between the tuning circuit and the tuning element or the gain medium.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: no structure has been recited for adjusting the path length and for detecting the intensity. Applicant has recited a tuning circuit performing several functions without defining the necessary structure to

accomplish the recited functions, furthermore "tuning" implies adjustment to a desired value and does not imply detecting.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,16,22 are rejected under 35 U.S.C. 102(b) as being anticipated by Owa et al (PN 5,552,926).

Regarding claims 1,2,22,

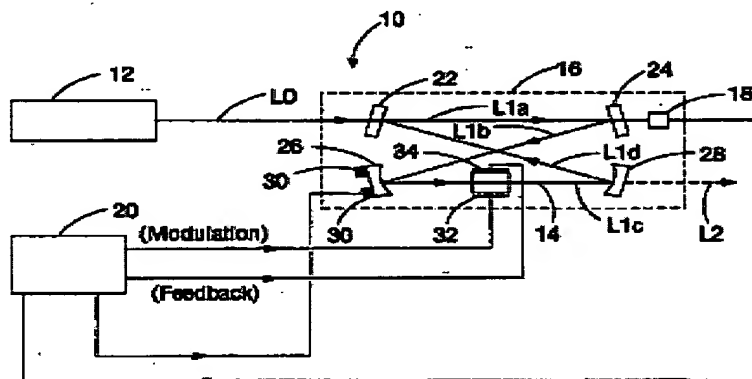
Owa et al illustrates in figure 1, a laser system having a laser device (12) [applicant's gain medium] for emitting a laser light into resonator (16) see column 8 lines 7-9, having a tunable nonlinear crystal (14) [applicant's tuning element] optically coupled with the laser device via the resonator and provides a second harmonic laser beam [applicant's passband] column 5 lines 16-24 and column 8 lines 29-32 and having an electric circuit (20) [applicant's tuning circuit] for servo control and modulation of the nonlinear crystal see column 8 lines 7-10 and see a detailed discussion in column 8 lines 7-62 and column 9 lines 1-30 . The laser system also illustrates, optical detector (18) for intensity detection of the laser beam, see column 5 lines 39-42 and also illustrates a piezoelectric element (30) for changing the resonator length. The electric circuit (20) receives feedback from the optical detector (18) and provides servo control

Art Unit: 2828

of the resonator length via the piezoelectric element and provides tuning to the nonlinear crystal (14), see column 8 lines 44-63 and column 9 lines 31-54.

Regarding claim 16,

The method steps recited are anticipated by the laser structure of figure 1, as described above pertaining to claims 1 and 22.



- 10 Wavelength conversion device
- 12 Laser device (light radiation means)
- 14 BBO crystal (nonlinear optical material)
- 16 Resonator (resonance means)
- 18 Optical detector (optical detection means)
- 20 Electric circuit for servo control
- 32 Electrode (first electric field application means)
- 34 Electrode (second electric field application means)

Claims 1,2,5,6,7,16,20,21,22,26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Danielmeyer (PN 3,676,799).

Regarding claims 1,2,22,

Danielmeyer illustrates in figure 1 a laser system having a laser medium (10) [applicant's gain medium], a tunable etalon (15) [applicant's tuning element] see column 2 lines 11-13, and a circuit composed of photo detector (19), phase detector (18), oscillator (17) and amplifier (20). The laser system provides modulation of the tunable

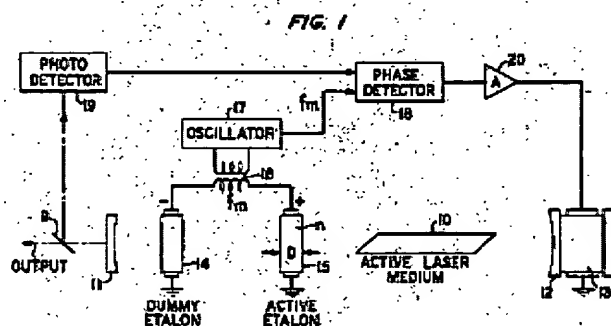
etalon and provides cavity length adjustment via piezoelectric crystal (13) and mirror (12) in accordance to the error signals provided by the phase detector and the photo detector, as described in the abstract and in column 2 lines 1-67.

Regarding claim 5,

Figure 1 illustrates a mirror (12) [applicant's retro reflector] disposed at an end of the cavity, which provides cavity length adjustment in accordance with the signals provided by the phase detector and the photo detector, as described in the abstract and in column 2 lines 1-67.

Regarding claims 6,7,26,27,

Figure 1 illustrates a photo detector (19) and a phase detector (18). The laser system provides modulation of the tunable etalon and provides cavity length adjustment via piezoelectric crystal (13) and mirror (12) in accordance to the error signals provided by the phase detector and the photo detector, as described in the abstract and in column 2 lines 1-67.



Regarding claims 16,20,21,

The method steps recited are anticipated by the laser structure of figure 1, as described above pertaining to claims 1 and 22.

Allowable Subject Matter

Claims 3,4,8-15,17-19,23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the prior arts alone or in combination discloses the claimed laser having the recited limitations of dependent claims 3,4,8,9,17,19,23,25.

Regarding claim 3,

None of the cited prior arts discloses or suggest in particular having at least one of the optical path length modulator or the optical path length adjuster integrated with the gain medium.

Regarding claim 4,

None of the cited prior arts discloses or suggest in particular having the optical path length modulator and the optical path length adjuster integrated with one another and responsive to the modulation signal and the error correction signal.

Regarding claim 8,

None of the cited prior arts discloses or suggest in particular having at least one of the frequency or the amplitude of the tuning circuit selected to increase the coupling efficiency of the optical beam by spreading a line width of the optical beam.

Regarding claims 9-15,

None of the cited prior arts discloses or suggest the recited limitations of dependent claim 9, in particular having a grid generator to generate a first set of passband aligned with the center wavelength and a channel selector to select the channels to tune the optical beam by generation and tuning of at least a second passband with the first set of passband.

Regarding claims 17,18,23,24,

None of the cited prior arts discloses or suggest the recited limitations of dependent claims 17 and 23, in particular having filtering the optical beam to exhibit a first set of passband aligned with corresponding channels and tuning the optical beam to at least a selected one of the first set of passbands.

Regarding claims 19 and 25,

None of the cited prior arts discloses or suggest in particular having modulating the optical path length at a frequency selected to increase the threshold for Stimulated Brillouin Scattering (SBS) in the optical coupling of the gain medium with an optical fiber.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY can be reached on 571-272-1835. The fax phone

Art Unit: 2828

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARMANDO RODRIGUEZ
Examiner
Art Unit 2828


MINSUN HARVEY
Supervisor
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AR/MH